

REMARKS

Claims 1 through 26 and new Claim 27 are pending in the application.

Claim 1 has been amended to reflect advantageous inventive coated reinforcements in which the coating contains a maximum of 5% by weight cellulosic filler. Support for this amendment can be found in the Application-as-filed, for example on Page 6, lines 25 through 30.

Claim 1 has been amended to emphasize inventive food casings in which the reinforcement is a fibrous support web. Support for this amendment can be found in the Application-as-filed, for example on Page 3, lines 25 through 30 in conjunction with Page 12, lines 1 through 2.

Claim 3 has been amended to reflect advantageous inventive food casings in which the coating permeates the reinforcement. Support for this amendment can be found in the Application-as-filed, for example on Page 11, lines 21 through 25.

Claim 6 has been amended to emphasize advantageous embodiments in which the protein consists of gelatin, collagen, casein, gluten, zein, ardein, pea protein, cottonseed protein and/or fish protein. Support for this amendment can be found in the Application-as-filed, for example on Page 5, lines 26 through 31.

Claim 27 has been added to complete the record for examination and highlight advantageous embodiments of the invention. Claim 27 is directed to advantageous food casings in which the coating has a coating weight of 10 to 200 g/m² after drying, resulting in a water vapour permeability of 300 to 1500 g/m²d. Support for Claim 27 can be found in the Application-as-filed, for example on Page 10, lines 9 through 14 and Page 10, lines 26 through 27.

Applicants respectfully submit that this response does not raise new issues, but merely places the above-referenced application either in condition for allowance, or alternatively, in better form for appeal. Reexamination and reconsideration of this application, withdrawal of all rejections, and formal notification of the allowability of the pending claims are earnestly solicited in light of the remarks which follow.

The Claimed Invention is Patentable

in Light of the Art of Record

Claims 1 through 8, 10 through 17 and 19 through 26 stand rejected over U K Patent No. 1,544,155 (UK 155) to Ozima et al. and WIPO Publication WO 98/34490, whose United States equivalent is United States Patent No. 6,902,783 (US 783). Claim 9 stands rejected in light of the foregoing references and further in view of United States Published Application No. 2002/0064580 (US 580) to Gord et al. Claim 18 stands rejected over US 155 and US 783 in further light of United States Patent No. 5,955,126 (US 126) to Jon et al.

It may be useful to briefly consider the invention before addressing the merits of the rejection.

Cellulosic food casings have long been known in the art. Processes by which to form cellulosic food casings generally involve extruding a solution of either viscose-cellulose or NMMO-cellulose. Cellulose films, such as the films of US 155, are produced from a viscose-cellulose solution and are well known in the art as "cellophane," for example. Unfortunately, cellulosic food casings can be environmentally problematic to produce. In addition, cellulosic coatings may be attacked by cellulytic enzymes (cellulases) which are formed, for example, by molds.

Altogether unexpectedly, Applicants have found food casings which can be produced simply, inexpensively, and in an environmentally friendly manner. Advantageously, the films barrier properties may be set over a wide range, so that the casings may be used for a multiplicity of different foods. The inventive films further are far less susceptible to cellulytic enzymes. In that regard, the Examiner's attention is kindly directed to the Application-as-filed on Page 3, lines 10 through 24.

Applicants have more particularly determined that casings formed from fibrous support webs that have been coated with a film-forming-protein composition can be produced simply and inexpensively. In advantageous embodiments, the coating may optionally include up to a maximum of 5% by weight cellulosic filler. If the film-forming protein is water-soluble, the coating also incorporates at least one compound to crosslink the protein, as reflected in Claim 1.

In particularly advantageous embodiments, the fibrous support web is a consolidated nonwoven or spunbonded fabric, a woven fabric, loop-formingly knitted fabric, loop-drawingly knitted fabric, laid fabric or a porous film, as recited in Claim 2.

In especially beneficial aspects, the coating has a coat weight of 10 to 200 g/m² after drying to impart a water vapour permeability of 300 to 1500 g/m²d to the resulting casing, as reflected in newly added Claim 27.

The cited references do not teach or suggest the claimed invention.

UK 155 is directed to cellophane film that is coated with a dispersion containing at least 40 % by weight of soy protein, at least part of which is denatured. (Page 1, lines 16 and Page 2, lines 1 – 20 and 49 - 52). The soy-coatings of US 155 migrate onto the foodstuff following a "migration treatment," in order to impart a glossy surface to the foodstuff after the casing is peeled away. (Page 3, lines 93 – 122 and Page 4, lines 113 - 118). US 155 notes that when the proportion of soy protein is less than 40 % by weight, the gelation of the coating layer is inhibited, and the coating layer does not sufficiently migrate to the surface of the foodstuffs.

(Page 2, lines 30 – 41). US 155 also discloses that if a part of the soy is not denatured, then the coating will fail to release uniformly. (Page 2, lines 62 – 75).

Applicants respectfully submit that UK 155 does not teach or suggest the claimed invention.

UK 155, requiring its coating to migrate, does not teach or suggest coatings containing either insoluble protein or water-soluble protein and at least one compound which crosslinks the water-soluble protein, as reflected in Claim 1. More particularly, the protein-containing material coated onto the cellophane film of US 155 transfers onto the surface of a food product, while the coating of the presently claimed food casing does not. Applicants respectfully submit that to modify UK 155 so as to eliminate its required migration would render UK 155 unfit for its intended purpose of imparting gloss to foodstuffs.

UK 155, solely directed to soy-coated cellophane, further does not teach or suggest the inventive food casing formed from a coated fibrous support web, as recited in Claim 1 as-amended and as reflected in Claim 25. Applicants respectfully submit that it is well known to those skilled in the art that cellophane films, such as the films of US 155, are fully transparent and do not contain any fibers or fibrous support webs.

UK 155 thus can not teach or suggest such casings in which the reinforcement is a consolidated nonwoven or spunbonded fabric, a woven fabric, loop-formingly knitted fabric, loop-drawingly knitted fabric, laid fabric or a porous film, as recited in Claim 2.

Nor can UK 155 teach or suggest such coatings in which the coating permeates the reinforcement, as recited in Claim 3 as-amended. In fact, UK 155, requiring complete transfer of its coating from the cellophane onto the foodstuff, clearly teaches away from such advantageous embodiments.

And UK 155 most certainly does not teach or suggest such casings in which the protein consists of gelatin, collagen, casein, gluten, zein, ardein, pea protein, cottonseed protein or fish protein, as recited in Claim 6 as-amended. Applicants respectfully submit that to modify UK 155 so as to omit its required soy-protein would altogether change its principle of operation.

UK 155 likewise fails to teach or suggest that such coatings having a coat weight of 10 to 200 g/m² after drying would result in a water vapour permeability of 300 to 1500 g/m²d, as reflected in newly added Claim 27.

Accordingly, Applicants respectfully submit that the claimed invention is patentable in light of UK 155, considered either alone or in any combination with the remaining art of record.

US 783 does not cure the deficiencies in UK 155.

US 783 is similarly directed to extruded films. US 783 is particularly directed to edible films formed from thermoplastic biopolymers, such as thermoplastic starch. (Col. 1, lines 52 – 67 and Col. 2, lines 38 – 41). To strengthen the films, the biopolymer blends may further include wood pulp, cotton linters, pigments or the like, presumably in edible quantities. (Col. 3, lines 44 – 46). The wood pulp fibers of US 783 have a length of at most 5 mm, preferably at most 2 mm. (Col. 3, lines 48 – 50). The edible casings of US 783 can be produced as seamless casings via ring extrusion. (Col. 4, lines 26 – 30).

Applicants respectfully make of record that the amount of fibers within US 783 and the fiber length must be chosen in such a way that the shaped body is still edible. Consequently, the amount of the fibers must be kept rather low and the length of the fibers must be sufficiently short.

US 783, solely directed to edible film, does not teach or suggest the inventive food casing formed from a coated web, as recited in Claim 1 as-amended and as reflected in Claim 25.

US 783, disclosing wood pulp fibers having a length of at most 5 mm, further does not teach or suggest the inventive food casing formed from a fibrous support. Applicants more specifically respectfully submit that the extremely short fibers of US 783 can not form the recited support web. Applicants further respectfully submit that to modify US 783 so as to incorporate the recited fibrous support web would render US 783 unsuitable for its intended purpose as an edible film.

US 783 thus can not teach or suggest such casings in which the reinforcement is a consolidated nonwoven or spunbonded fabric, a woven fabric, loop-formingly knitted fabric, loop-drawingly knitted fabric, laid fabric or a porous film, as recited in Claim 2.

Nor does US 783 teach or suggest such coatings in which the coating permeates such a fibrous support web, as recited in Claim 3 as-amended.

US 783 likewise fails to teach or suggest that such coatings having a coat weight of 10 to 200 g/m² after drying would result in a water vapour permeability of 300 to 1500 g/m²d, as reflected in newly added Claim 27.

Accordingly, Applicants respectfully submit that the claimed invention is patentable in light of US 783, considered either alone or in any combination with the remaining art of record.

There would have been no motivation to have combined UK 155 and US 783. However, even if UK 155 and US 783 were combined (which Applicants did not), the claimed invention would not have resulted.

The combination does not teach or suggest coatings containing either insoluble protein or water-soluble protein and at least one compound which crosslinks the water-soluble protein, as reflected in Claim 1. UK 155 instead clearly requires its coating to migrate.

And the combination, both solely directed to extruded films, further does not teach or suggest the inventive food casing formed from a coated fibrous support web, as recited in Claim 1 as-amended and as reflected in Claim 25.

The combination also does not teach or suggest such casings in which the reinforcement is a consolidated nonwoven or spunbonded fabric, a woven fabric, loop-formingly knitted fabric, loop-drawingly knitted fabric, laid fabric or a porous film, as recited in Claim 2. In fact, the coating release requirements of UK 155 and the edibility of the films of US 783 both teach away from the advantageous embodiments of Claim 2.

Nor does the combination teach or suggest such coatings in which the coating permeates such fibrous support webs, as recited in Claim 3 as-amended.

And the combination most certainly does not teach or suggest such casings in which the protein consists of gelatin, collagen, casein, gluten, zein, ardein, pea protein, cottonseed protein or fish protein, as recited in Claim 6 as-amended. Applicants respectfully reiterate that to modify UK 155 so as to omit its required soy-protein would altogether change its principle of operation.

The combination likewise fails to teach or suggest that such coatings having a coat weight of 10 to 200 g/m² after drying would result in a water vapour permeability of 300 to 1500 g/m²d, as reflected in newly added Claim 27.

Accordingly, Applicants respectfully submit that the claimed invention is patentable in light of UK 155 and 783, considered either alone or in any combination with the remaining art of record.

Claim 9 is likewise patentable in further view of US 580.

Applicants respectfully reiterate that US 580 is directed to cellulose-based food casings, particularly cellulose-based food casings obtained in an amine oxide process. [0017]. In the process, a solution of cellulose in a monohydrate of N-methyl-morpholine-N-oxide (NMMO) is prepared, a surface-modifying additive and an internal-structure-changing additive are added to the solution and the mixture is then shaped into a tubular casing. [0013 and 0027]. The surface-modifying additive may be selected from any of a generic list, including paraffin, and is present in amounts as low as 0.2 % by weight . [0014 and 0020] In contrast, the cellulose-based casings include at least 50% by weight of cellulose or cellulose derivatives. [0018] The cellulose-based casings may optionally be reinforced with “fiber paper.” [0018 and 0039].

Applicants respectfully reiterate that US 580, directed to cellulose casings incorporating any of a number of surface-modifying additives, does not teach or suggest coated casings in which the coating contains a maximum of only 5% by weight cellulosic, much less such coatings further incorporating at least one film-forming protein, as recited in Claim 9.

US 580, silent as to any cross-linking of its surface modifier, further does not teach or suggest such coatings containing water-soluble protein and at least one compound which crosslinks the film-forming protein, as further recited in Claim 9.

US 580, teaching optional reinforcement with “paper,” also does not teach or suggest such advantageous casings further incorporating a fibrous web, as recited in Claim 9 as-amended.

Accordingly, Applicants respectfully submit that Claim 9 is likewise patentable in light of US 580, considered either alone or in combination with the remaining art of record.

UK 155 and US 783 do not teach or suggest the claimed invention, as noted in the preceding remarks.

There would have been no motivation to have combined UK 155, US 783 and US 580. However, even if UK 155, US 783 and US 580 were combined (which Applicants did not), the claimed invention would not have resulted.

The combination, each directed to extruded films, do not teach or suggest the inventive food casing formed from a coated fibrous support web, as recited in Claim 9 as-amended.

Accordingly, Applicants respectfully submit that Claim 9 is patentable in light of UK 155, US 783 and US 580, considered either alone or in any combination with the remaining art of record.

Claim 18 is similarly patentable in further light of US 126.

US 126 is directed to self-coloring food casings, which may be formed from either cellulose or any of a number of synthetic polymers, with regenerated cellulose casings being preferred. (Col. 10, lines 18 - 38). US 126 generically notes that its casings may include a paper reinforcement. (Col. 4, lines 4 - 7). The casings of US 126 incorporate a transferable coating that contains a bixin colorant. (Col. 9, lines 8 - 11). The transferable colorant coating further includes a soluble film-forming agent selected from any of a generic list of materials, with cellulose ether preferred. (Col. 8, lines 16 - 23). US 126 expressly notes that moisture solubilizes the film forming agent, thereby releasing the bixin dye pigment during subsequent processing. (Col. 12, lines 55 - 62). In fact, the soluble film forming agent is noted on several occasions as performing a transfer/release function for the colorant. (Col. 13, line 65 - Col. 14, line 2). Applicants respectfully submit that the film forming agent thus remains soluble over the life of the casing to perform its required release of bixin.

US 126, requiring its film forming agent to remain soluble over the life of the casing, does not teach or suggest coatings containing either insoluble protein or water-soluble protein and at least one compound which crosslinks the water-soluble protein, as reflected in Claim 18.

Applicants respectfully reiterate that to modify US 126 so as to eliminate the required solubility of the film former would render US 126 unfit for its intended purpose as a color transfer casing.

US 126, teaching optional reinforcement with “fiber paper,” also does not teach or suggest such advantageous casings further incorporating a fibrous support web, as recited in Claim 18 as-amended.

Accordingly, Applicants respectfully submit that Claim 18 is likewise patentable in light of US 126, considered either alone or in combination with the remaining art of record.

UK 155 and US 783 do not teach or suggest the claimed invention, as noted in the preceding remarks.

There would have been no motivation to have combined UK 155, US 783 and US 126. However, even if UK 155, US 783 and US 126 were combined (which Applicants did not), the claimed invention would not have resulted.

The combination does not teach or suggest coatings containing either insoluble protein or water-soluble protein and at least one compound which crosslinks the water-soluble protein, as reflected in Claim 18. The primary and tertiary references, both requiring migratory properties over the life of their respective casings, instead clearly teach away from the claimed invention.

Nor does the combination teach or suggest the inventive food casing formed from a coated fibrous support web, as recited in Claim 18 as-amended.

Accordingly, Applicants respectfully submit that Claim 18 is likewise patentable in light of UK 155, US 783 and US 126, considered either alone or in any combination with the remaining art of record.

CONCLUSION

It is respectfully submitted that Applicants have made a significant and important contribution to the art, which is neither disclosed nor suggested in the art. It is believed that all of pending Claims 1 through 27 are now in condition for immediate allowance. It is requested that the Examiner telephone the undersigned if any questions remain to expedite examination of this application.

It is not believed that extensions of time or fees are required, beyond those which may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time and/or fees are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required is hereby authorized to be charged to Deposit Account No. 50-2193.

Respectfully submitted,

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